

MEMORANDUM

To: Bob Morgan
Jerry Olds
Kent Jones
Jim Riley
Mike Quealy
Norm Johnson
Boyd Clayton
Bill Schlotthauer

From: Jared Manning
Chuck Williamson

Date: January 25, 2001

Re: Salt Lake Valley Ground-Water Management Plan

Attached is the latest draft of the proposed Salt Lake Valley Ground-Water Management Plan. On May 17, 2000 the Division of Water Rights presented a previous version of this plan during a public meeting with Salt Lake Valley water users. The objective of that meeting was to solicit comments and suggestions from water users before proposing a final draft of the plan. Although only a small number of responses were received, several meaningful comments were submitted. The attached draft integrates several changes based upon these comments as well as those proposed by staff. It is presented here for your review and commentary. A staff meeting, scheduled for February 7, 2001, will highlight changes made to the plan and allow time to discuss certain aspects and pertinent issues related to the plan. Below is a listing of the significant changes made to the plan since the last draft.

1. **Elimination of the ten-feet-in-five-years water level decline criterion for determining excessive localized withdrawals.** It was determined that this specific criterion is not applicable to all areas of the valley. That is, in some areas of the valley a drop in ground-water levels of ten feet in five years may be indicative of excessive withdrawals, but in other areas, may only indicate natural water level fluctuation. Subsequently, we have replaced the ten-feet-in-five-years rule with a list of factors to be considered in determining where excessive withdrawals are occurring. This change was made as a result of comments from staff.
2. **Addition of restrictions for ground-water withdrawals in the southwestern portion of the valley.** This section (2.2.4) was added to the plan to aid the ground-water remediation efforts planned by Kennecott Utah Copper Corporation (KUCC). This section was added at the request of Kennecott.

3. **Addition of allowance for change applications that propose to transfer water rights from a restricted management square to another restricted management square with a lesser potential withdrawal.** Provided that certain criteria are met (see section 2.3.5), allowing these point of diversion changes may help to better distribute withdrawals throughout the valley. This was added at the request of several water users.
4. **Addition of allowance for change applications that propose to transfer water rights a limited distance.** This guideline (section 2.3.6) was added to allow water users a sufficient distance to find replacement well locations. This was added at the request of water users.
5. **Elimination of requirement for total volume certification in proofs of appropriation and proofs of change.** Many water users have expressed strong dissatisfaction with this requirement. There has also been discussion that this requirement has not brought about the desired effect of reducing the amount of paper water on file.
6. **Elimination of critical review of segregation applications.** It was determined that this section does little to accomplish the overall objectives of the plan.
7. **Elimination of water quality reporting requirement for water users that have a potential withdrawal of 250 acre-feet or more.** It was determined that enough water quality information is currently collected through other government agencies to thoroughly monitor water quality changes in Salt Lake Valley.
8. **Changes in Central Region boundaries.** The Central Region boundary was extended south to the Jordan Narrows along a narrow corridor enveloping the Jordan River. This change would better represent the discharge area of the valley.

Aside from the above changes, one issue pertinent to implementation of the management plan remains unresolved. Although the plan calls for distributing withdrawals according to the priority dates of individual water rights in areas where withdrawal limits have been exceeded or excessive withdrawals are occurring, there exists no definitive, generalized method for actually distributing the water. Several methods have been proposed, however each becomes extremely complex when attempting to take into account all variables such as determining the area in which the restrictions will be imposed and the amount of time users will be restricted from pumping. The approach that we have taken in this draft of the plan is to suggest a list of general considerations for remedying the problem. Thus area-specific information such as local geohydrology and recent precipitation patterns would be taken into account. In this way, the methodology for limiting withdrawals will be based on the specifics of the site, not just arbitrarily designated. Obviously this problem is applicable to other areas within the state where ground-water management plans have been implemented and will undoubtedly require further attention. Any suggestions that may help resolve the problem are welcome.

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Re: groundwater management plan

S.L.C.

Dorothy

1.0 Introduction

The purpose of this document is to present the state engineer's proposed policy for the management of the ground-water resources of Salt Lake Valley. The objectives of this ground-water management plan are to promote wise use of the ground-water resource, to protect existing water rights, and to address water quality issues and over-appropriation of ground water in the valley. In proposing this ground-water management plan, the state engineer is using his statutory authority to administer the measurement, appropriation, and distribution of the ground water of Salt Lake Valley. This plan is intended to provide specific management guidelines under the broader statutory provisions within Title 73 of the Utah Code.

For the purposes of this plan, the Salt Lake Valley consists of the unconsolidated basin-fill material generally bounded by the Wasatch Range to the east, Oquirrh Range to the west, Great Salt Lake to the north, and Traverse Mountains to the south. This area is illustrated in Figure 1.

2.0 Proposed Salt Lake Valley Ground-Water Management Plan

The following policy guidelines are hereby proposed:

2.1 New Appropriations

The Salt Lake Valley is closed to new appropriations of ground water from the principal aquifer with the exception of single-family uses in non-subdivision areas where water is not available from a public water supply system. Applications to appropriate water will be limited to a maximum annual diversion of 1.0 acre-foot. The uses under such applications shall not exceed the in-house domestic purposes of one family, the irrigation of 0.10 acres, and/or the stock watering of a maximum of 10 heads of livestock. Such rights shall be approved as fixed time applications for a twenty-year period and upon the condition that when a public water system is available, the users will connect to the system, the well will be sealed, and the water right abandoned. Upon expiration of the twenty-year period, if a public water supply system is still not available, such application will be extended upon proper filing of a request for extension.

2.2 Ground-Water Withdrawal Limits

In order to fulfill the objectives of this management plan, guidelines are being proposed to help distribute ground-water withdrawals. If excessive withdrawals occur, the state engineer will distribute the water in accordance with the priority dates of the applicable water rights using the following guidelines:

2.2.1 Safe Yield from the Principal Aquifer

Salt Lake Valley has been divided into four regions: western, eastern, central, and

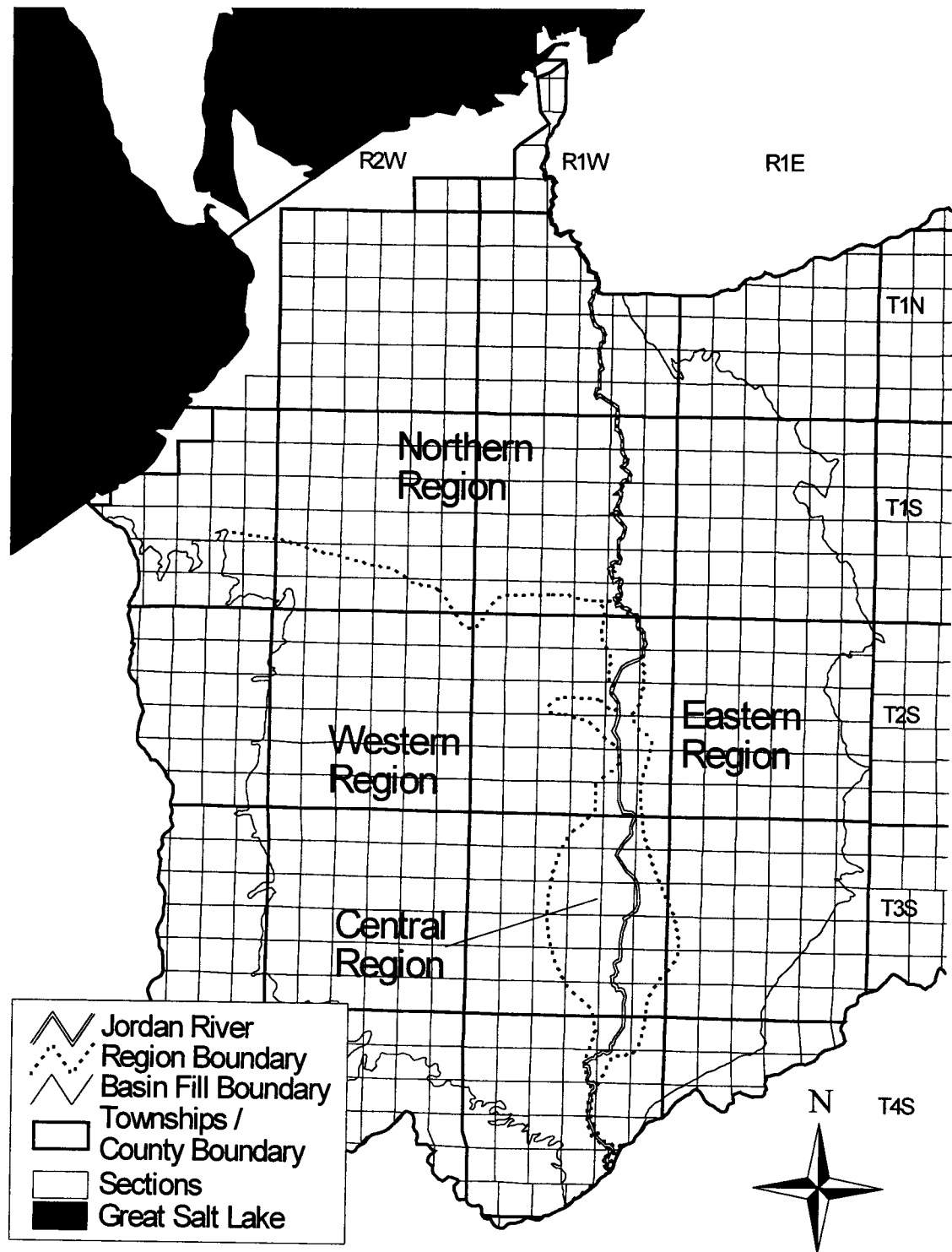


Figure 1. Salt Lake Valley Groundwater Management Plan Regions

northern as shown on Figure 1. The state engineer may limit the quantity of water withdrawn in these regions so that the average amount of water withdrawn over the long term does not exceed the safe yield. The safe yield of each region has been estimated and is shown in Table 1 below.

Table 1. Regional safe yields

Region	Safe Yield (acre-feet per year)
Western	25,000
Eastern	90,000
Central	20,000
Northern	30,000

2.2.2 Localized Ground-Water Withdrawals

The state engineer may limit withdrawals in any area of the valley where excessive withdrawals are causing definite and significant harm to the aquifer system. The state engineer recognizes that there are many different factors to consider in determining when and where this is occurring. Some of the relevant factors to consider are:

- ground-water level trends
- trends in ground-water withdrawal quantities
- changes in water quality
- recent climatic conditions
- local hydrogeologic conditions
- impact on existing water rights

Upon identifying areas where excessive withdrawals may be causing harm to the aquifer and after public review and commentary on applicable data, the state engineer may limit the withdrawals in that area according to the priority dates of each applicable water right and all applicable state statutes. The total quantity of ground water restricted from withdrawal will correspond to at least the quantity necessary to preclude further harm to the aquifer system. Further pumping restrictions may be imposed if harm to the aquifer system worsens. Pumping restrictions may also be lifted in part or in whole after the aquifer system has recovered to an acceptable level, provided no future reoccurrences of the conditions which caused the harm are anticipated.

2.2.3 Ground-Water Withdrawals From the Shallow Aquifer

Additional withdrawals above the allowable withdrawal limits set forth in this section will be allowed if such withdrawals are from the shallow aquifer, provided that such

withdrawals do not have an adverse effect on the aquifer or on other underground or surface-water rights.

2.2.4 Ground-Water Withdrawals From the Southwestern Portion of the Valley

A portion of the aquifer in the Southwestern part of the valley is being remediated by the removal of contamination associated with past mining practices. As part of the remediation effort, Kennecott Utah Copper Corporation (KUCC) has committed to assisting affected water users obtain adequate water. Applications in this area which propose to appropriate water, change the point of diversion, or drill a replacement well will be critically reviewed so as not to interfere with the remediation process. In conjunction with this, KUCC has committed to working with applicants to determine if there is a feasible well location, depth, and pumping rate for future wells in the contaminated area. The contaminated area is defined as extending 3000 feet from the known 250 mg/l sulfate isoconcentration contour. The approximate boundary for this area is shown on Figure 2.

2.3 Applications to Change the Point of Diversion, Place of Use, and/or Purpose of Use

Each change application will be evaluated based upon its own merits and in accordance with applicable statutes. In addition, the evaluation may consider – but will not necessarily be limited to – potential impact on existing water rights, the aquifer system as a whole, and overall water quality. The following guidelines will be used when evaluating change applications:

- 1) Change applications that propose to transfer water rights historically supplied from the shallow aquifer to the principal aquifer will not be approved.
- 2) Change applications that propose to transfer water rights into the eastern region from another region or into the western regions from another region will not be approved.
- 3) Change applications that propose to transfer water rights into a restricted area¹ will not be approved.
- 4) Change applications that propose to transfer water rights into a management square² where the potential withdrawals, under the existing water rights, exceed the limits set forth in Table 2 and shown in Figure 2 below will only be considered if the applicant can show that:
 - a) There is sufficient reason to believe that existing water rights will not be impaired.
 - b) Compensation or adequate replacement water will be provided to existing water rights if impairment occurs.
 - c) Additional ground-water withdrawals will not significantly reduce water levels, degrade the water quality, or otherwise negatively impact the aquifer.

Table 2. Potential withdrawal limit guidelines for evaluation of change applications

Region	Maximum Potential Withdrawal per Management Square (acre-feet per year)
Western	4,000
Eastern	12,000
Central	6,000
Northern	6,000

- 5) Change applications that propose to transfer water rights from a restricted management square with a greater potential diversion to a restricted management square with a lesser potential diversion will be allowed provided that the potential diversion in the hereafter management square is at most 75% of the potential diversion of the heretofore management square and the criteria listed under numbers 1-4 above have been met.
- 6) Change applications that propose to drill a replacement well within a distance of one-half of one mile from the original point of diversion will be allowed provided that the criteria listed under numbers 1-4 above have been met.

2.4 Well Spacing and Flow Rate

Each new well shall be designed so that, when pumped at its maximum flow rate, it will not cause more than 12 feet of draw down on an existing well. Users in a particular area may enter into an agreement to provide a variance from this requirement if it does not interfere with third party rights and upon approval of the variance by the state engineer.

2.5 Extensions of Time for Water Right Applications

The state engineer will critically review all future extension requests on approved applications to appropriate or change water and applications for non-use pursuant to Section 73-3-12 of the Utah Code. In reviewing extension requests, if the state engineer finds unjustified delays or a lack of due diligence, he may reduce the priority date, grant the request in part, or deny the extension of time request.

2.6 Ground-Water Remediation Projects

The state engineer will evaluate each proposed ground-water remediation project based upon its own merits. In order to allow for remediation of ground water the state engineer may allow withdrawal amounts in excess of those withdrawal limits outlined in Table 1 above or allow changes that would exceed the limits set forth in Table 2 above if he finds that it is in the best interest of the public and has a specific project life.

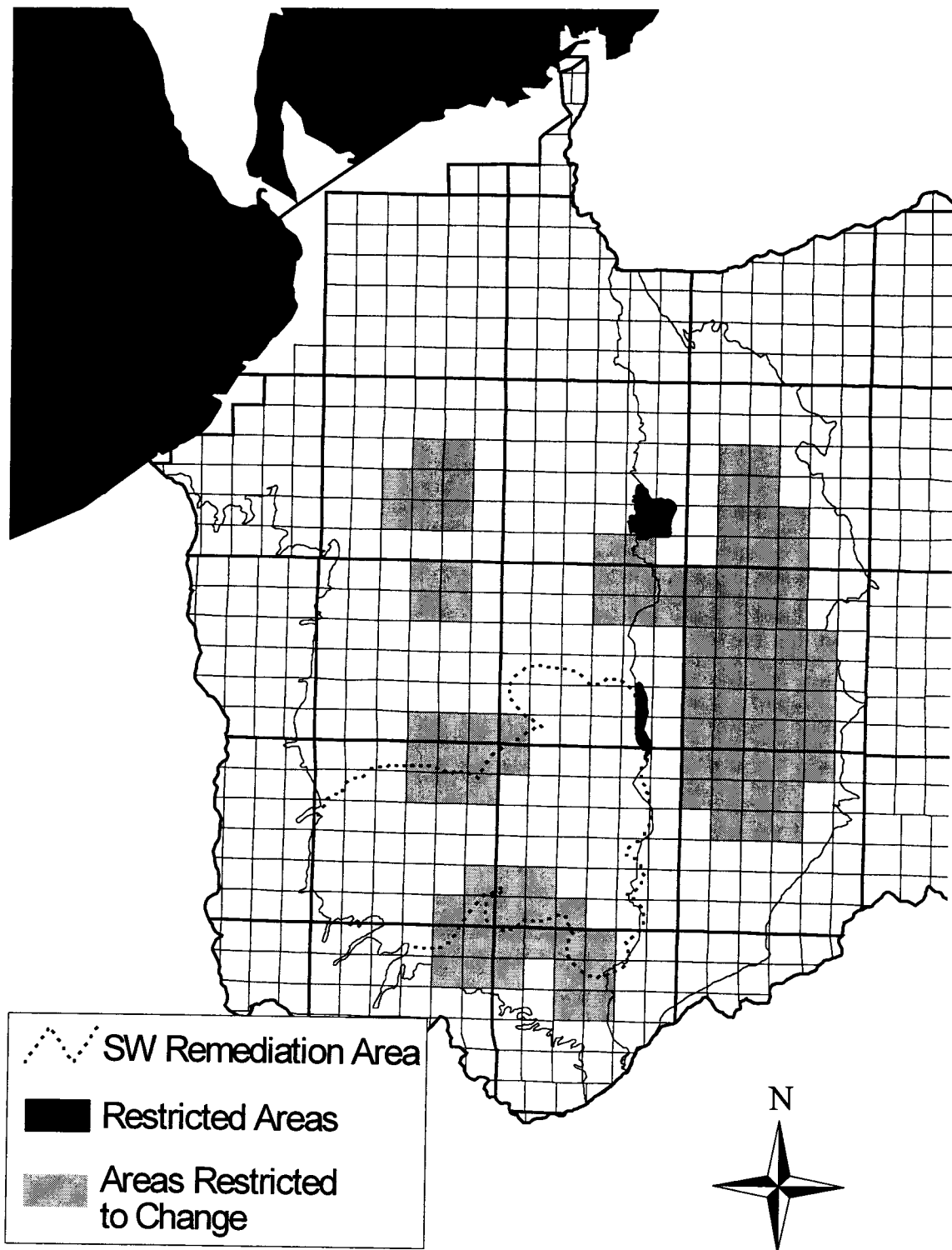


Figure 2. SW Remediation Area, Restricted Areas, and Areas Restricted to Change

2.7 Aquifer Storage Recovery (ASR)

The state engineer will evaluate each proposed ASR project based upon its own merits. In general, withdrawals credited from aquifer injection will not count towards the withdrawal limits outlined in Table 1 above.

2.8 Monitoring Activities and Aquifer Status Update

The Division will monitor water quality reports submitted by water users to the Division of Environmental Quality and periodically give an updated, valley-wide water quality summary. Additionally, the Division will provide water use information and will update the water rights priority lists periodically. Finally, the Division will review new pertinent data that further or more accurately defines the hydrogeology of Salt Lake Valley and will modify the plan if necessary. Any modifications to the plan would occur in consultation with water users and other interested parties.

Endnotes

1. *Restricted Areas*

There are two restricted areas currently in the plan that are associated with the following contaminated sites:

- Vitro Tailings Site
- Sharon Steel Site

as shown in Figure 1. In order to protect the quality of the water by preventing changes in the hydraulic gradient and mobilization of contaminants at these contaminated sites, the transfer of water rights into these areas will not be allowed. Restricted areas are based on available data and may change as new data is obtained. New restricted areas may be added to the plan upon request to the state engineer, an evaluation of the data supports such designation, and the public has had an opportunity to review the data and comment on the proposed designation.

2. *Management Squares*

A management grid has been set up based on the U.S. Public Land Survey's system. Under this system, the land is divided into township, range, and section. Each section is a square measuring approximately one mile on each side. In this management plan, one management square consists of any four sections, in a two section by two section configuration. Using this method, the squares overlap each other such that each section is actually part of four different management squares. Figure A, below, illustrates how section 11 is part of four different management squares.

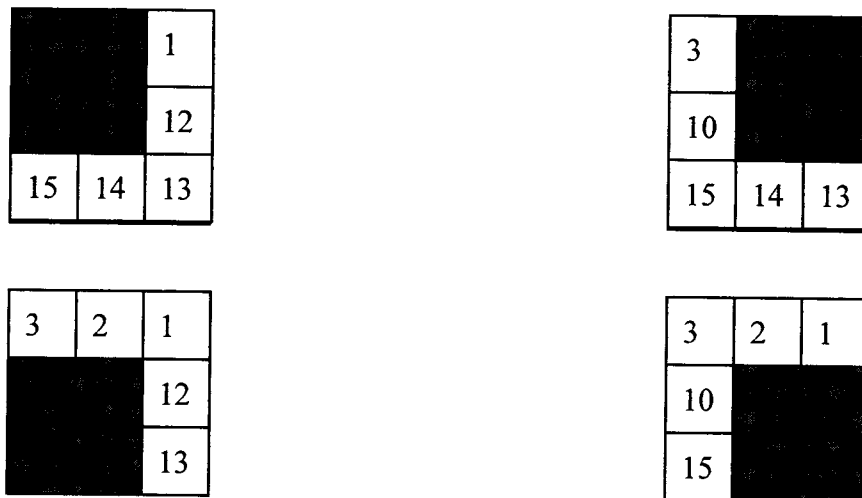


Figure A. Management squares for evaluating change applications.

February 9, 2001

RE: Final draft of the Salt Lake Valley Groundwater Management Plan

An interim groundwater management plan for Salt Lake Valley has been in place since 1991. For the past few years the Division of Water Rights ~~(division)~~ has been developing a final management plan. This has been a public process in which various drafts of the plan have been presented to the water users and then modified following their responses and additional review by division staff.

The attached draft integrates several changes based upon water users' comments since the last public meeting held on May 17, 2000 as well as those changes proposed by division staff. It is presented here for your review and commentary. The significant changes made to the plan since the last draft are outlined below.

1. **Addition of restrictions for ground-water withdrawals in the southwestern portion of the valley.** This section (2.2.4) was added to the plan to aid the aquifer remediation efforts planned by Kennecott Utah Copper Corporation.
2. **Addition of allowance for change applications that propose to transfer water rights from a restricted management square to another restricted management square with a lesser potential withdrawal.** Provided that certain criteria are met (see section 2.3.5), allowing these point of diversion changes may help to better distribute withdrawals throughout the valley.
3. **Addition of allowance for change applications that propose to transfer water rights a limited distance.** This guideline (section 2.3.6) was added to allow water users a sufficient distance to find replacement well locations.
4. **Elimination of requirement for total volume certification in proofs of appropriation and proofs of change.** From a water management point of view, it is very important for us to have a realistic accounting of the perfected water rights. ~~So~~ although we have removed this specific provision from the plan, certification of proofs may still be subject to a volume limitation when it is clear what amount of water under a water right is being placed to beneficial use.
5. **Elimination of critical review of segregation applications.** It was determined that this section does little to accomplish the overall objectives of the plan.

6. **Elimination of water quality reporting requirement for water users that have a potential withdrawal of 250 acre-feet or more.** It was determined that enough water quality information is currently collected through other government agencies to thoroughly monitor water quality changes in Salt Lake Valley.
7. **Changes in Central Region boundaries.** The Central Region boundary was extended south to the Jordan Narrows along a narrow corridor enveloping the Jordan River (Figure 1). This change would better represent the discharge area of the valley.
8. **Elimination of the “ten-feet-in-five-years” water level decline criterion for determining excessive localized withdrawals.** It was determined that this specific criterion is not applicable to all areas of the valley. That is, in some localized areas of the valley a drop in ground-water levels of ten feet in five years may be indicative of excessive withdrawals, but in other areas, may only indicate natural water level fluctuations. Subsequently, we have replaced the ten-feet-in-five-years rule with some general guidelines for determining where excessive withdrawals are occurring (2.2.2). Any restrictions on pumping would occur following a public hearing.

Please submit any final comments and suggestions, in writing, before April 9, 2000 or if there are serious concerns with any provisions of the plan, we are willing to meet with individual water users to try and resolve the issues before a final plan is implemented.

In reviewing your copy of *Reserved Water Rights Settlement Manual*, it becomes obvious that ascertaining and quantifying federal reserved water rights for Grand Canyon National Park would be an enormous undertaking. From a very basic viewpoint it would seem that it could be conceivably argued that construction of Glen Canyon Dam and reductions in flow to the Colorado River defeats or entirely defeats the purposes of Grand Canyon National Park. However, Grand Canyon's problems seem not to be limited to water quantity but are tied to the natural flood cycles of the river as well as water quality/temperature issues. From a water rights perspective these additional problems seem to be irrelevant. Thus even if Grand Canyon N.P. were granted the entire flow of the Colorado, it wouldn't necessarily correct their problem.

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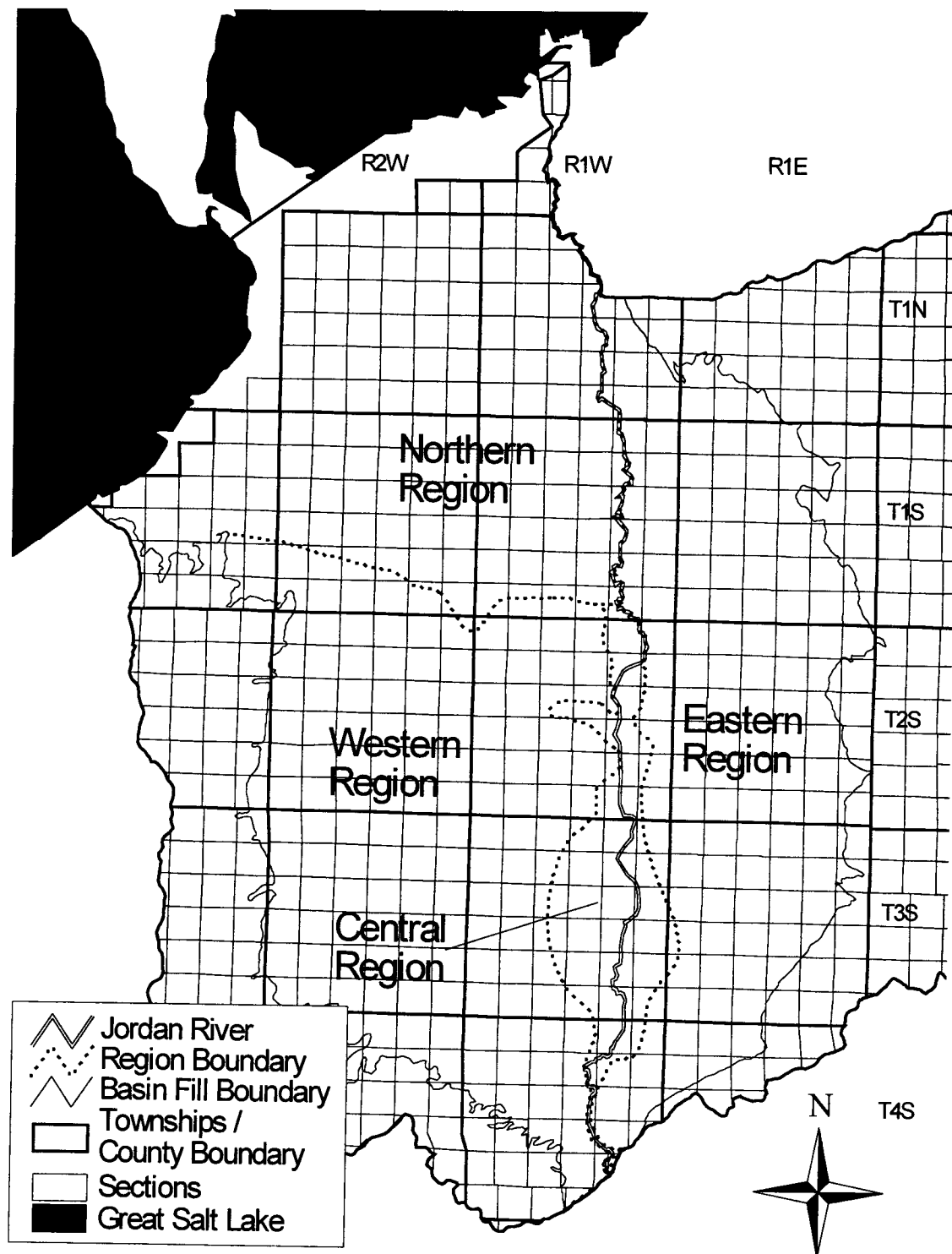


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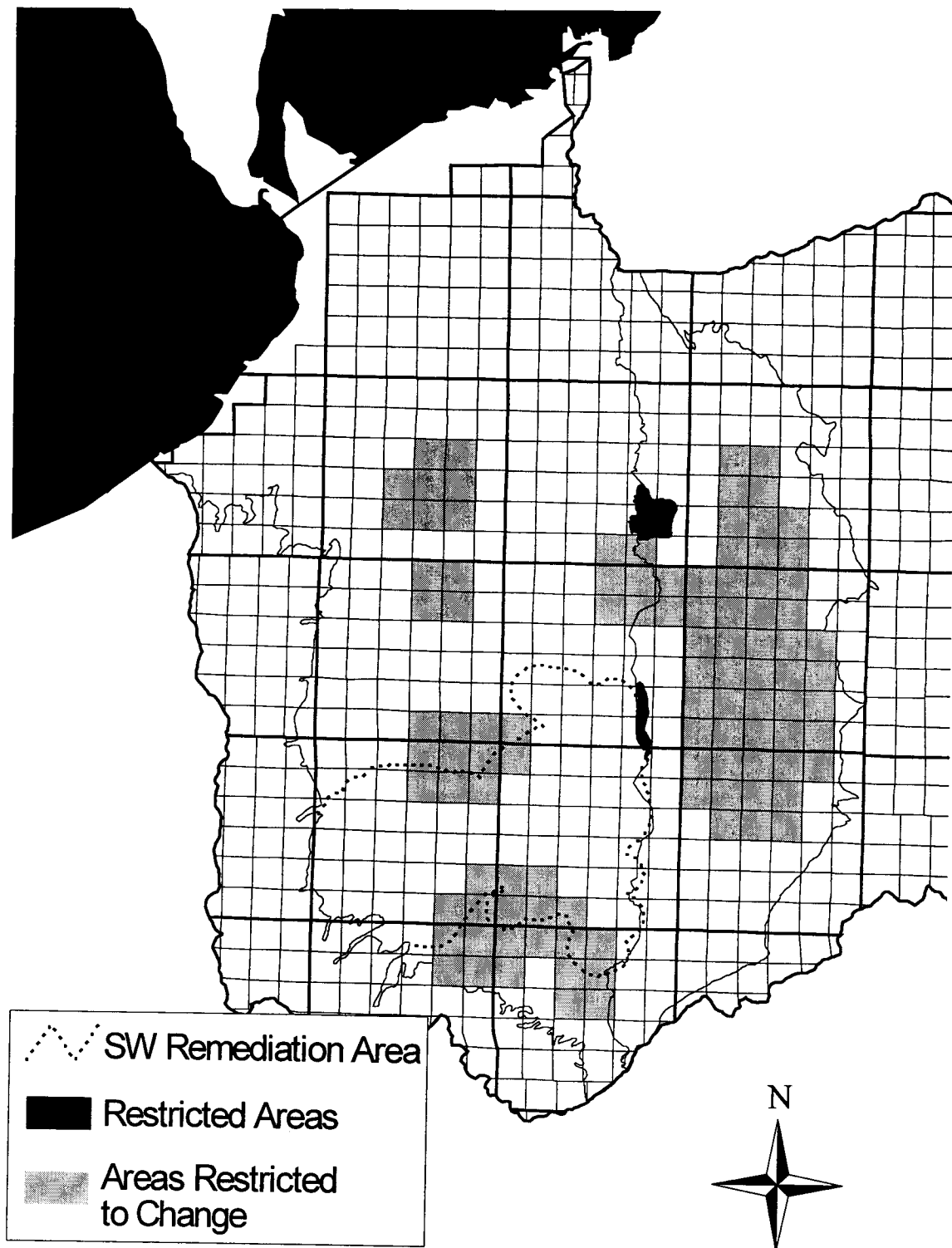


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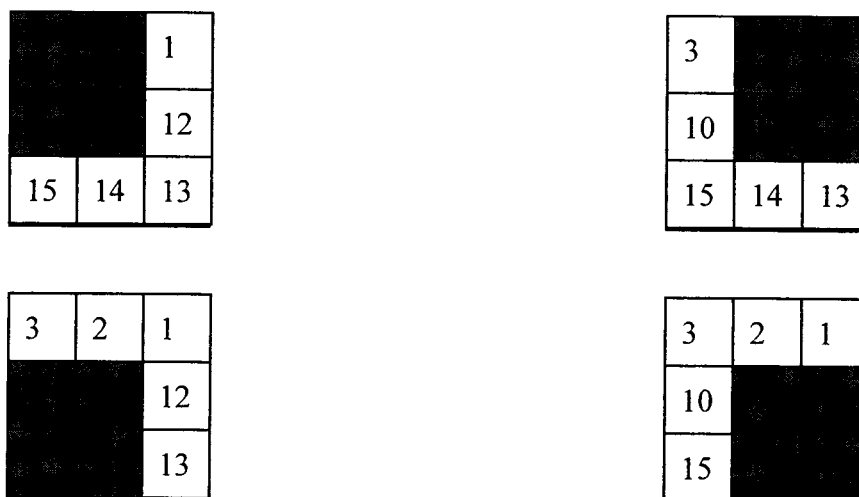


Figure A. Management squares for evaluating change applications.

MEMORANDUM

To: Bob Morgan
Jerry Olds
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From: Jared Manning
Chuck Williamson

Date: January 25, 2001

Re: Salt Lake Valley Ground-Water Management Plan

Attached is the latest draft of the proposed Salt Lake Valley Ground-Water Management Plan. On May 17, 2000 the Division of Water Rights presented a previous version of this plan during a public meeting with Salt Lake Valley water users. The objective of that meeting was to solicit comments and suggestions from water users before proposing a final draft of the plan. Although only a small number of responses were received, several meaningful comments were submitted. The attached draft integrates several changes based upon these comments as well as those proposed by staff. It is presented here for your review and commentary. A staff meeting, scheduled for February 7, 2001, will highlight changes made to the plan and allow time to discuss certain aspects and pertinent issues related to the plan. Below is a listing of the significant changes made to the plan since the last draft.

1. **Elimination of the ten-feet-in-five-years water level decline criterion for determining excessive localized withdrawals.** It was determined that this specific criterion is not applicable to all areas of the valley. That is, in some areas of the valley a drop in ground-water levels of ten feet in five years may be indicative of excessive withdrawals, but in other areas, may only indicate natural water level fluctuation. Subsequently, we have replaced the ten-feet-in-five-years rule with a list of factors to be considered in determining where excessive withdrawals are occurring. This change was made as a result of comments from staff.
2. **Addition of restrictions for ground-water withdrawals in the southwestern portion of the valley.** This section (2.2.4) was added to the plan to aid the ground-water remediation efforts planned by Kennecott Utah Copper Corporation (KUCC). This section was added at the request of Kennecott.

3. **Addition of allowance for change applications that propose to transfer water rights from a restricted management square to another restricted management square with a lesser potential withdrawal.** Provided that certain criteria are met (see section 2.3.5), allowing these point of diversion changes may help to better distribute withdrawals throughout the valley. This was added at the request of several water users.
4. **Addition of allowance for change applications that propose to transfer water rights a limited distance.** This guideline (section 2.3.6) was added to allow water users a sufficient distance to find replacement well locations. This was added at the request of water users.
5. **Elimination of requirement for total volume certification in proofs of appropriation and proofs of change.** Many water users have expressed strong dissatisfaction with this requirement. There has also been discussion that this requirement has not brought about the desired effect of reducing the amount of paper water on file.
6. **Elimination of critical review of segregation applications.** It was determined that this section does little to accomplish the overall objectives of the plan.
7. **Elimination of water quality reporting requirement for water users that have a potential withdrawal of 250 acre-feet or more.** It was determined that enough water quality information is currently collected through other government agencies to thoroughly monitor water quality changes in Salt Lake Valley.
8. **Changes in Central Region boundaries.** The Central Region boundary was extended south to the Jordan Narrows along a narrow corridor enveloping the Jordan River. This change would better represent the discharge area of the valley.

Aside from the above changes, one issue pertinent to implementation of the management plan remains unresolved. Although the plan calls for distributing withdrawals according to the priority dates of individual water rights in areas where withdrawal limits have been exceeded or excessive withdrawals are occurring, there exists no definitive, generalized method for actually distributing the water. Several methods have been proposed, however each becomes extremely complex when attempting to take into account all variables such as determining the area in which the restrictions will be imposed and the amount of time users will be restricted from pumping. The approach that we have taken in this draft of the plan is to suggest a list of general considerations for remedying the problem. Thus area-specific information such as local geohydrology and recent precipitation patterns would be taken into account. In this way, the methodology for limiting withdrawals will be based on the specifics of the site, not just arbitrarily designated. Obviously this problem is applicable to other areas within the state where ground-water management plans have been implemented and will undoubtedly require further attention. Any suggestions that may help resolve the problem are welcome.

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1.0 Introduction

The purpose of this document is to present the state engineer's proposed policy for the management of the ground-water resources of Salt Lake Valley. The objectives of this ground-water management plan are to promote wise use of the ground-water resource, to protect existing water rights, and to address water quality issues and over-appropriation of ground water in the valley. In proposing this ground-water management plan, the state engineer is using his statutory authority to administer the measurement, appropriation, and distribution of the ground water of Salt Lake Valley. This plan is intended to provide specific management guidelines under the broader statutory provisions within Title 73 of the Utah Code.

For the purposes of this plan, the Salt Lake Valley consists of the unconsolidated basin-fill material generally bounded by the Wasatch Range to the east, Oquirrh Range to the west, Great Salt Lake to the north, and Traverse Mountains to the south. This area is illustrated in Figure 1.

2.0 Proposed Salt Lake Valley Ground-Water Management Plan

The following policy guidelines are hereby proposed:

2.1 New Appropriations

The Salt Lake Valley is closed to new appropriations of ground water from the principal aquifer with the exception of single-family uses in non-subdivision areas where water is not available from a public water supply system. Applications to appropriate water will be limited to a maximum annual diversion of 1.0 acre-foot. The uses under such applications shall not exceed the in-house domestic purposes of one family, the irrigation of 0.10 acres, and/or the stock watering of a maximum of 10 heads of livestock. Such rights shall be approved as fixed time applications for a twenty-year period and upon the condition that when a public water system is available, the users will connect to the system, the well will be sealed, and the water right abandoned. Upon expiration of the twenty-year period, if a public water supply system is still not available, such application will be extended upon proper filing of a request for extension.

2.2 Ground-Water Withdrawal Limits

In order to fulfill the objectives of this management plan, guidelines are being proposed to help distribute ground-water withdrawals. If excessive withdrawals occur, the state engineer will distribute the water in accordance with the priority dates of the applicable water rights using the following guidelines:

2.2.1 Safe Yield from the Principal Aquifer

Salt Lake Valley has been divided into four regions: western, eastern, central, and

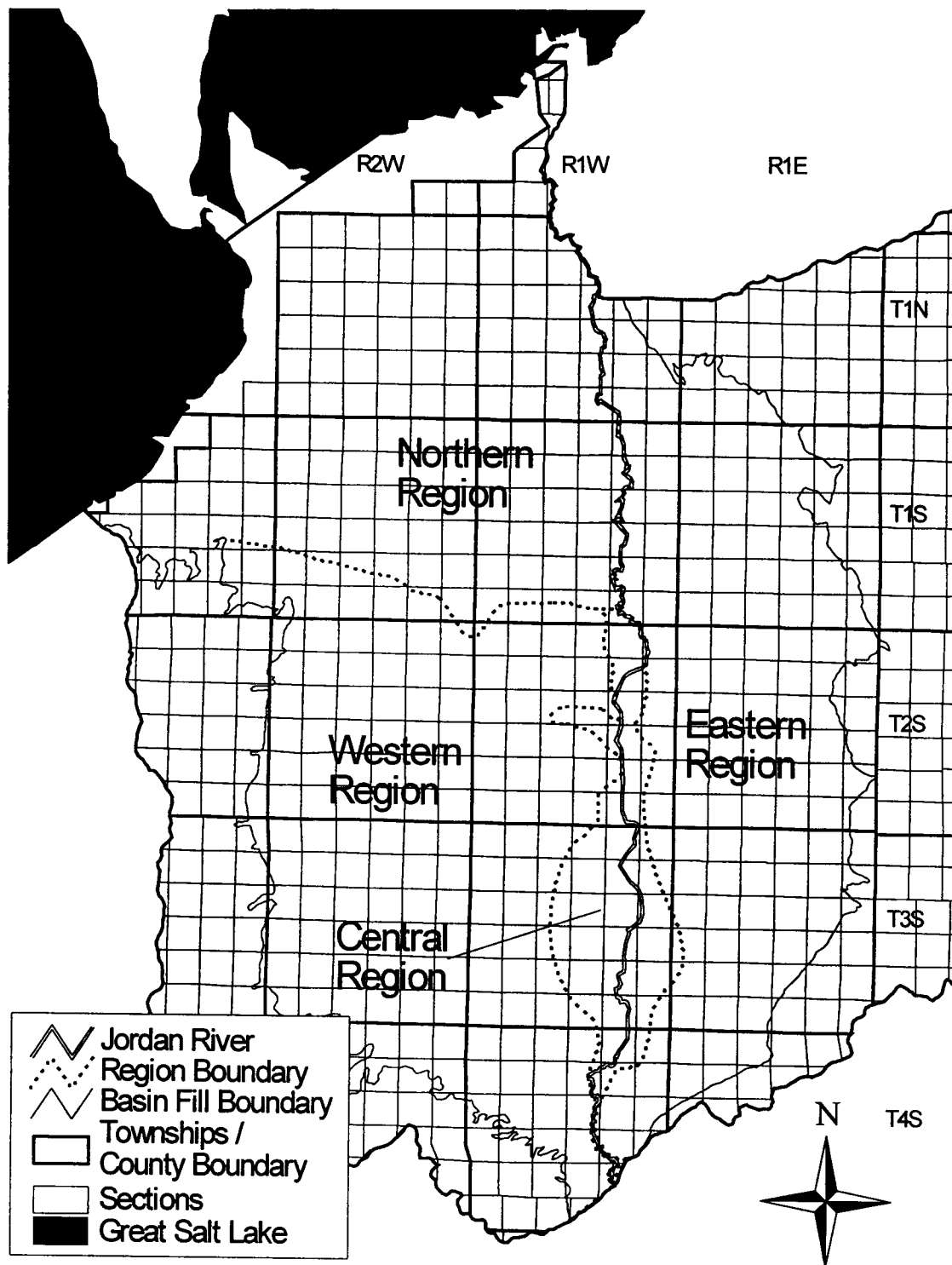


Figure 1. Salt Lake Valley Groundwater Management Plan Regions

northern as shown on Figure 1. The state engineer may limit the quantity of water withdrawn in these regions so that the average amount of water withdrawn over the long term does not exceed the safe yield. The safe yield of each region has been estimated and is shown in Table 1 below.

Table 1. Regional safe yields

Region	Safe Yield (acre-feet per year)
Western	25,000
Eastern	90,000
Central	20,000
Northern	30,000

2.2.2 Localized Ground-Water Withdrawals

The state engineer may limit withdrawals in any area of the valley where excessive withdrawals are causing definite and significant harm to the aquifer system. The state engineer recognizes that there are many different factors to consider in determining when and where this is occurring. Some of the relevant factors to consider are:

- ground-water level trends
- trends in ground-water withdrawal quantities
- changes in water quality
- recent climatic conditions
- local hydrogeologic conditions
- impact on existing water rights

Upon identifying areas where excessive withdrawals may be causing harm to the aquifer and after public review and commentary on applicable data, the state engineer may limit the withdrawals in that area according to the priority dates of each applicable water right and all applicable state statutes. The total quantity of ground water restricted from withdrawal will correspond to at least the quantity necessary to preclude further harm to the aquifer system. Further pumping restrictions may be imposed if harm to the aquifer system worsens. Pumping restrictions may also be lifted in part or in whole after the aquifer system has recovered to an acceptable level, provided no future reoccurrences of the conditions which caused the harm are anticipated.

2.2.3 Ground-Water Withdrawals From the Shallow Aquifer

Additional withdrawals above the allowable withdrawal limits set forth in this section will be allowed if such withdrawals are from the shallow aquifer, provided that such

withdrawals do not have an adverse effect on the aquifer or on other underground or surface-water rights.

2.2.4 Ground-Water Withdrawals From the Southwestern Portion of the Valley

A portion of the aquifer in the Southwestern part of the valley is being remediated by the removal of contamination associated with past mining practices. As part of the remediation effort, Kennecott Utah Copper Corporation (KUCC) has committed to assisting affected water users obtain adequate water. Applications in this area which propose to appropriate water, change the point of diversion, or drill a replacement well will be critically reviewed so as not to interfere with the remediation process. In conjunction with this, KUCC has committed to working with applicants to determine if there is a feasible well location, depth, and pumping rate for future wells in the contaminated area. The contaminated area is defined as extending 3000 feet from the known 250 mg/l sulfate isoconcentration contour. The approximate boundary for this area is shown on Figure 2.

2.3 Applications to Change the Point of Diversion, Place of Use, and/or Purpose of Use

Each change application will be evaluated based upon its own merits and in accordance with applicable statutes. In addition, the evaluation may consider – but will not necessarily be limited to – potential impact on existing water rights, the aquifer system as a whole, and overall water quality. The following guidelines will be used when evaluating change applications:

- 1) Change applications that propose to transfer water rights historically supplied from the shallow aquifer to the principal aquifer will not be approved.
- 2) Change applications that propose to transfer water rights into the eastern region from another region or into the western regions from another region will not be approved.
- 3) Change applications that propose to transfer water rights into a restricted area¹ will not be approved.
- 4) Change applications that propose to transfer water rights into a management square² where the potential withdrawals, under the existing water rights, exceed the limits set forth in Table 2 and shown in Figure 2 below will only be considered if the applicant can show that:
 - a) There is sufficient reason to believe that existing water rights will not be impaired.
 - b) Compensation or adequate replacement water will be provided to existing water rights if impairment occurs.
 - c) Additional ground-water withdrawals will not significantly reduce water levels, degrade the water quality, or otherwise negatively impact the aquifer.

Table 2. Potential withdrawal limit guidelines for evaluation of change applications

Region	Maximum Potential Withdrawal per Management Square (acre-feet per year)
Western	4,000
Eastern	12,000
Central	6,000
Northern	6,000

- 5) Change applications that propose to transfer water rights from a restricted management square with a greater potential diversion to a restricted management square with a lesser potential diversion will be allowed provided that the potential diversion in the hereafter management square is at most 75% of the potential diversion of the heretofore management square and the criteria listed under numbers 1-4 above have been met.
- 6) Change applications that propose to drill a replacement well within a distance of one-half of one mile from the original point of diversion will be allowed provided that the criteria listed under numbers 1-4 above have been met.

2.4 Well Spacing and Flow Rate

Each new well shall be designed so that, when pumped at its maximum flow rate, it will not cause more than 12 feet of draw down on an existing well. Users in a particular area may enter into an agreement to provide a variance from this requirement if it does not interfere with third party rights and upon approval of the variance by the state engineer.

2.5 Extensions of Time for Water Right Applications

The state engineer will critically review all future extension requests on approved applications to appropriate or change water and applications for non-use pursuant to Section 73-3-12 of the Utah Code. In reviewing extension requests, if the state engineer finds unjustified delays or a lack of due diligence, he may reduce the priority date, grant the request in part, or deny the extension of time request.

2.6 Ground-Water Remediation Projects

The state engineer will evaluate each proposed ground-water remediation project based upon its own merits. In order to allow for remediation of ground water the state engineer may allow withdrawal amounts in excess of those withdrawal limits outlined in Table 1 above or allow changes that would exceed the limits set forth in Table 2 above if he finds that it is in the best interest of the public and has a specific project life.

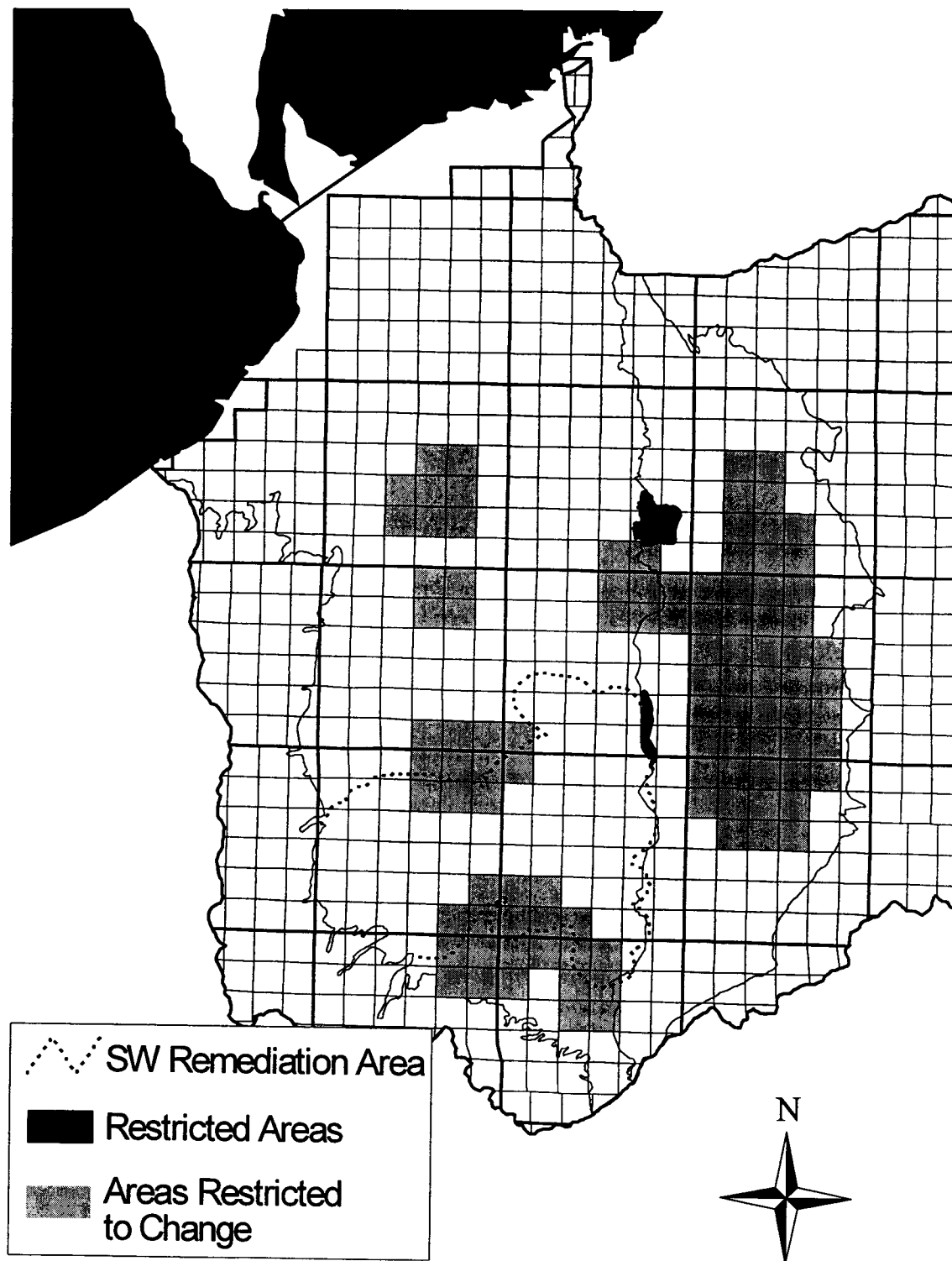


Figure 2. SW Remediation Area, Restricted Areas, and Areas Restricted to Change

2.7 Aquifer Storage Recovery (ASR)

The state engineer will evaluate each proposed ASR project based upon its own merits. In general, withdrawals credited from aquifer injection will not count towards the withdrawal limits outlined in Table 1 above.

2.8 Monitoring Activities and Aquifer Status Update

The Division will monitor water quality reports submitted by water users to the Division of Environmental Quality and periodically give an updated, valley-wide water quality summary. Additionally, the Division will provide water use information and will update the water rights priority lists periodically. Finally, the Division will review new pertinent data that further or more accurately defines the hydrogeology of Salt Lake Valley and will modify the plan if necessary. Any modifications to the plan would occur in consultation with water users and other interested parties.

Endnotes

1. *Restricted Areas*

There are two restricted areas currently in the plan that are associated with the following contaminated sites:

- Vitro Tailings Site
- Sharon Steel Site

as shown in Figure 1. In order to protect the quality of the water by preventing changes in the hydraulic gradient and mobilization of contaminants at these contaminated sites, the transfer of water rights into these areas will not be allowed. Restricted areas are based on available data and may change as new data is obtained. New restricted areas may be added to the plan upon request to the state engineer, an evaluation of the data supports such designation, and the public has had an opportunity to review the data and comment on the proposed designation.

2. *Management Squares*

A management grid has been set up based on the U.S. Public Land Survey's system. Under this system, the land is divided into township, range, and section. Each section is a square measuring approximately one mile on each side. In this management plan, one management square consists of any four sections, in a two section by two section configuration. Using this method, the squares overlap each other such that each section is actually part of four different management squares. Figure A, below, illustrates how section 11 is part of four different management squares.

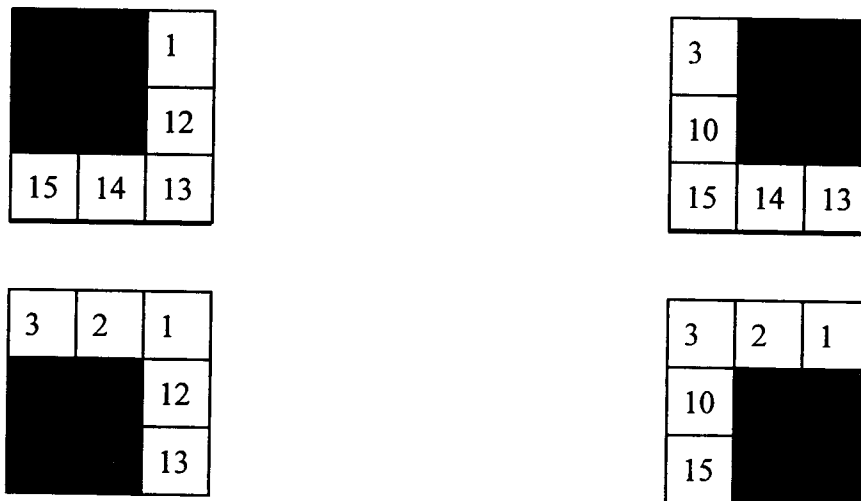


Figure A. Management squares for evaluating change applications.

SLV Groundwater Management Plan

Staff Meeting

Review of proposed changes since
May 2000 public meeting

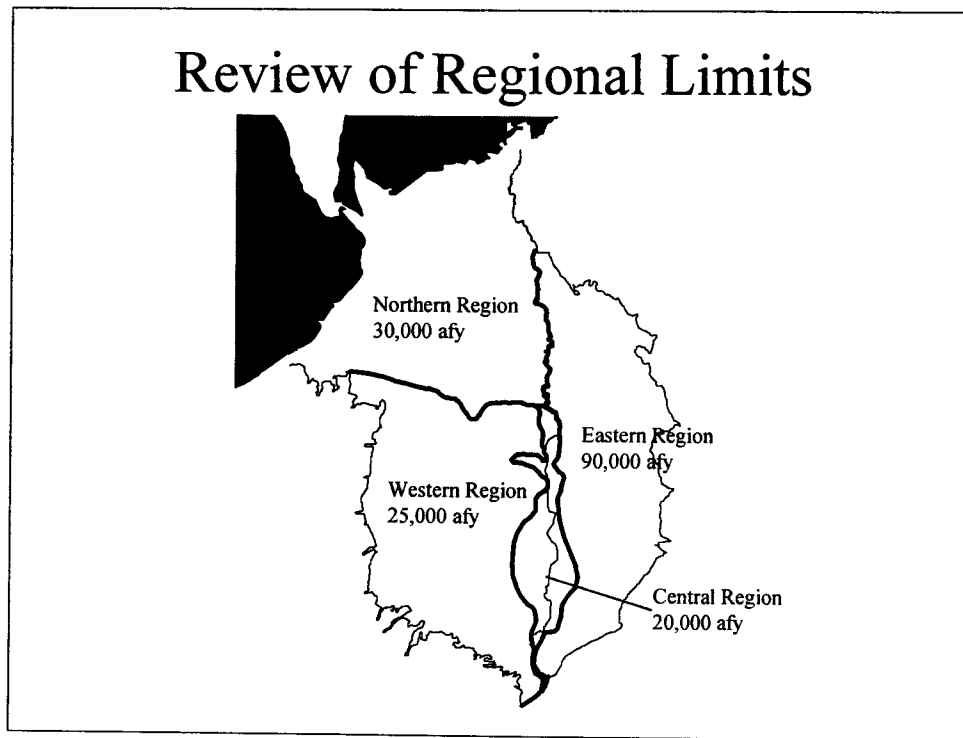
Feb. 7, 2001

What we would like to do today:

1. Present (briefly) some aspects of the latest draft of the plan
2. Highlight changes made since last draft
3. Leave significant time for discussion and questions

What we would like to gain from today's meeting

1. What direction to head from here.
2. Public meeting or back to the drawing board



Basic review of management plan structure

- 1.Changes that occurred in last draft
- 2.Outer boundary = Basin fill material
- 3.Division of valley aquifer into regions
 - Regions based upon hydrologic properties of aquifer (areas o recharge and discharge)
 - Regions assigned a withdrawal limit based upon estimated safe sustainable yield (model analysis)
- 4.Boundaries appear to be acceptable to water users based on comments received.

C h a n g e A p p l i c a t i o n s

- C o n s i d e r r e p l a c e m e n t w e l l s w i t h i n ½ m i l e
r a d i u s
- C o n s i d e r c h a n g e s i n t o r e s t r i c t e d s q u a r e s i f
p o t e n t i a l w i t h d r a w a l i s 7 5 % o r l e s s t h a n
h e r e t o f o r e p o t e n t i a l w i t h d r a w a l

Made some additions to the section pertaining to change application administration

1. Specifically address replacement wells.

- a. Users noted difficulty in finding replacement well locations
- b. Situation complicated with the addition of management square boundaries For instance: Case of users located near restricted square boundary.
- c. From a hydrologic viewpoint it makes little difference whether a well is located on one side of the boundary or another provided the distance from the original location is limited.
- d. Therefore we propose to allow the drilling of replacement wells within ½ mile of original point of diversion. Can cross management square boundaries.

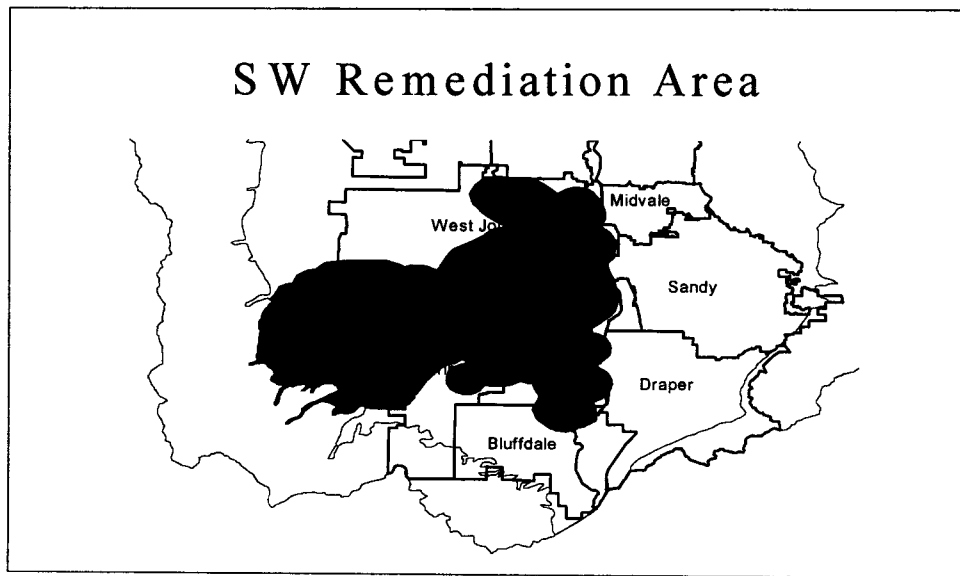
2. Address case whereby an application proposes to move from one restricted square to another

- a. Maybe desirable
- b. Hereafter square must have a lower potential withdrawal than the heretofore square
- c. Significantly less else cause a problem by solving another
- d. Therefore will consider these changes provided that hereafter square is at most 75% potential of heretofore

Optional

1. Both regulations subject to other restrictions

- a. May not cause impairment on existing rights
- b. If impairment occurs than replace or compensate
- c. No negative effects on aquifer (quality or drawdown)



Explicitly addressed the southwestern portion of valley

1. Contamination as a result of past mining practices (mainly sulfate)
2. Kennecott made a proposal to our office in August of 1999.
 - a. Asked to emplace certain restrictions on withdrawals in the area.
 1. Intended to reduce risk of contaminant migration
 2. Noninterference with remedial project
 - b. Area proposed consists of 3000 feet beyond the current 250 mg/l isoconcentration contour (denoted by gray area)
3. As a result we propose to evaluate all applications proposing to appropriate water in the area with the assistance of Kennecott if necessary
 - a. Kennecott has committed to help determine appropriate finishing depths, locations, and pumping rates.
4. Additionally, within their proposal, Kennecott has committed to aiding affected water users within this area obtain appropriate replacement water
5. Because state has given approval to this project, appropriate to consider Kennecott's proposal
6. Essentially what we have added comes directly from that proposal.

Total Volume Certification

- Requirement removed at the request of water users
- Compromise in order to gain wider support for the plan

The purpose of this requirement was to certify the actual volume of water used under a given water right so that the entire 724af/cfs was not held on to for future use. Do municipalities end up certifying the entire volume anyways? Is paper water artificially inflated by this requirement?

In past drafts of the plan we have required that with all proofs, not only the flow rate but total volume of water be certified.

1. Large backlash from users.
2. Users gave examples of how requirement could be abused and cause more harm than good.
3. Points were valid in certain situations (complex systems with multiple sources, approved flow rates only)
4. Doubt whether there points were valid in every case.
5. However, proposing to remove this requirement in order to gain wider support for the plan
6. Willing to reinstate this requirement if staff sees fit.

Other Changes

- Segregation Applications
- Water Quality Reporting Requirements
- Central Region Boundaries
- Removal of "ten feet in five years" rule for localized withdrawals

Segregation applications removed for simplicity. Water quality requirement removed because we have access to practically all quality data without direct reporting. Central Region boundary changes reflect discharge area defined in Tech Pub 110.

Segregation applications

1. Proposed to critically review all segregation applications
2. Felt this requirement was unnecessary. Does not help overall objectives of plan.

Water quality reporting.

1. Past: required those users with the capability of diverting 250 acre-feet or more to report data to us directly.
2. We feel that there exists significant data through other sources to properly characterize quality trends throughout the valley

Central region boundary

1. Extended further south along a narrow corridor of the Jordan River
2. Change better approximates the discharge boundary in that area

Finally, we have removed the 10 feet in 5 years drawdown rule for determining excessive withdrawals.

1. Not applicable to entire valley *→ Mention change on fixed time apps from New Apps 10 years to 20 years*
2. Replaced with a more general set of criteria used to identify areas of excessive withdrawals.
3. Lead in for Jared.

Distribution of Groundwater in 4 Easy Steps

- Identify the area being harmed
- Determine which wells are contributing to the problem
- Present the evidence at a public hearing
- Cut by priority

Good idea to approach in steps.

Identify and address issues at each level.

Very easy to get lost with so many hidden issues.

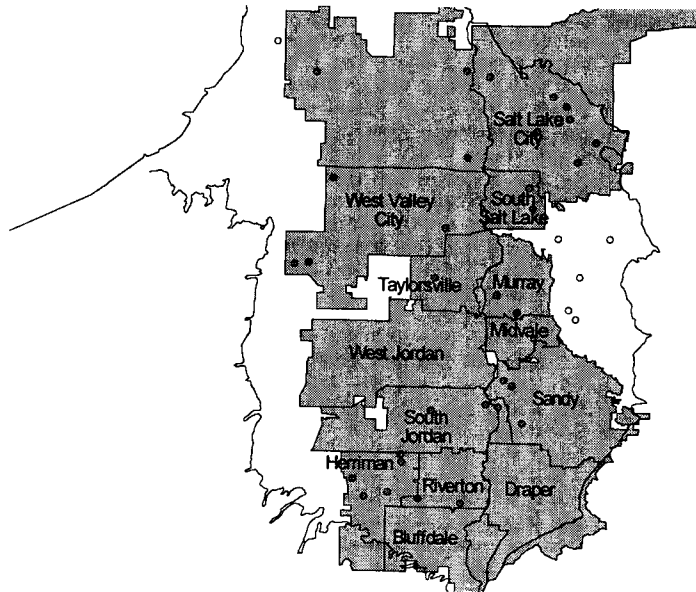
Identifying the Area

- Groundwater level trends
- Recent climatic conditions
- Local hydro-geologic conditions
- Changes in water quality
- Impact on existing water rights

1. Groundwater: departure from regional trends and precipitation data.
Significant reductions
2. Climate: related to number 1
3. Hydraulic conductivities
4. Water quality: significant changes, migration of poor quality water
5. A problem if users are affected.

Problem: Need criteria for drawing this area (putting a line on paper)

Current USGS Monitoring Wells



How will we be aware of these changes?

Monitoring well distribution isn't too bad although some holes exist.

Who's Causing the Damage?

- Water use data
- Well locations
- Priority dates

Within that area, Who is there?

Public Hearing

- All water users in affected area
- Present the evidence
- Show harm (or impending harm) to the public good
- Propose cuts

1. Tell em what we have found out
2. Get their take
3. Propose cuts
4. Run for cover!

Cutting by priority

- Small domestic wells?
- When would cuts go into effect?
- Enforcement
- Restrictions may be added or lifted in the future

Issues regarding cutting

1. Cut everybody?
2. When to implement and for how long?
3. Who is going to administer all this? (resource intensive)
4. How long?